Amendments to Claims

Claims 1-16 (Cancelled).

Claim 17 (Original). A method of fabricating a POFET, comprising the steps of:

coating a glass substrate with a semi-transparent gate electrode;

depositing upon the gate electrode an electrically insulating layer having a first side and a second side, the first side adjacent to the gate electrode;

forming on the second side of the insulating layer a semiconducting polymer layer comprised of a regioregular polyalkylthiophene responsive to incident light and having a 98.5% head-to-tail regiospecific conformation; and

forming on the semiconducting polymer layer electrically conducting source and drain electrodes.

Claim 18 (Currently amended). The method of claim 17, wherein the insulating ~~substrate~~ layer is comprised of a polymeric media.

Claim 19 (Currently amended). The method of claim 17, wherein the insulating ~~substrate~~ layer is partially transparent.

Claim 20 (Currently amended). The method of claim 17, wherein the semiconducting polymer layer further comprises a polymer matrix including, in dilute quantities, one or more electron acceptors selected from the group consisting of ~~buckministerfullerene~~ buckminsterfullerene C_{60} and derivatives thereof, viologen, dichloro-dicyano-benzoquinone, nanoparticles of titanium dioxide, nanoparticles of cadmium sulphide and the like, thereby enabling electron transfer from the polymer matrix upon photoexcitation in order to obtain a high photo-induced current between the drain and source electrodes.

Claim 21 (Original). The method of claim 17, wherein the regioregular polyalkylthiophene is Poly (3-octylthiophene).

Claim 22 (Original). The method of claim 17, wherein the regioregular polyalkylthiophene is Poly (3-hexylthiophene).

Claim 23 (Previously presented). A photosensing organic field effect transistor (POFET), comprising:

a substrate insulating layer, the insulating layer having a high relative dielectric constant and a first side and a second side;

a gate electrode, the gate electrode being an electrical conductor, the gate electrode being positioned adjacent to the first side of the insulating layer;

a semiconducting polymer layer, the semiconducting polymer layer being responsive to incident light, the semiconducting polymer layer having a first side, a second side, a first end and a second end, the second side of the semiconductor layer being adjacent the second side of the insulating layer;

a source electrode, the source electrode being an electrical conductor, the source electrode being in electrical contact with the first end of the semiconductor layer; and

a drain electrode, the drain electrode being an electrical conductor, the drain being in electrical contact with the second end of the semiconducting polymer layer, wherein a POFET saturation current gain of 100 or higher may be achieved.

Claims 24-27 (Cancelled).

Claim 28 (Previously presented). The method according to claim 17 wherein the POFET has characteristics such as drain/source current, saturation current gain and switching behavior achieved by applying a suitable combination of gate voltage and/or incident light of a selected duration and intensity.